Tea tree oil
PC Code: 028853
Type of Review: Acute toxicity

DP Number: 438161
EPA Reg. No.: 86182-1 and 86182-2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MEMORANDUM

DATE: March 22, 2017

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

SUBJECT: Science Review in Support of the Registration of Tea Tree Oil Technical Containing 100.0% Tea Tree Oil as its Active Ingredient.

Decision Number:	525690
DP Number:	438161
EPA Registration Number:	86182-1 and 86182-2
Chemical Class:	Biochemical
PC Code:	028853
CAS Number:	68647-73-4
Active Ingredient Tolerance/Exemption:	Non-food
MRID Numbers:	50154901-50154906

FROM: Angela L. Gonzales, Biologist
Biochemical Pesticides Branch
Biopesticides & Pollution Prevention Division (7511P)

3/22/17

THROUGH: Russell S. Jones, PhD, Senior Scientist
Biochemical Pesticides Branch
Biopesticides & Pollution Prevention Division (7511P)

3/22/2017

TO: Chris Pfeifer, Regulatory Action Leader
Biochemical Pesticides Branch
Biopesticides & Pollution Prevention Division (7511P)

ACTION REQUESTED

On behalf of Stockton (Israel) Ltd., Technology Sciences Group Inc. has requested a label amendment for the EP, Timorex Gold (EPA Reg. No. 86182-1), to reduce the Restricted Entry Interval (REI) from 24 to 12 hours. In support of the registration, the applicant has submitted acute toxicity data on the TGAI/MP, Tea Tree Oil Technical (EPA Reg. No. 86182-2).

RECOMMENDATIONS AND CONCLUSIONS

1. The mammalian toxicology submission is ACCEPTABLE.

MRID 50154901: ACCEPTABLE
MRID 50154902: ACCEPTABLE
MRID 50154903: ACCEPTABLE
MRID 50154904: ACCEPTABLE
MRID 50154905: ACCEPTABLE
MRID 50154906: ACCEPTABLE

a. The submitted acute toxicity studies are acceptable. Summaries of the data and updated toxicity categories are presented in Table 1 below.

NOTE TO RAL:

1. Although the REI is generally based on the Toxicity Category classification for the active ingredients in a product, it should be noted that the acute eye irritation study for the EP is classified into Toxicity Category II, indicating that the EP may be more irritating to the eye than the MP. For toxicity information on the MP, please refer to the memoranda from A. L. Gonzales to C. Walsh dated 02/28/2010 and 01/30/2013.

STUDY SUMMARIES

Acute Toxicity of Tea Tree Oil Technical (MRIDs 50154901-50154906)

In support of the request to reduce the REI for the EP, Timorex Gold, the applicant submitted an acute toxicity 6-pack on the TGAI/MP, Tea Tree Oil Technical. Acute toxicity data and/or information have previously been submitted and reviewed for the MP and are discussed in the memorandum from A. L. Gonzales thru F. Fort to C. Walsh dated 01/30/13. Both sets of data are summarized in Table 1 below. Data Evaluation Records (DERs) were not created for the new acute toxicity studies.

In regards to the acute dermal irritation studies, BPPD has determined that the toxicity category for the TGAI/MP should be revised to III. This is because the new study (MRID 50154905) is a guideline study which was conducted using the actual TGAI/MP and therefore is a more accurate representation of the potential for dermal irritation. The new study is considered to be more robust than the original study (MRID 47730404) because: 1) the original study was not a guideline study, 2) it is unknown if the tea tree oil used in that study was similar in composition to the TGAI/MP as there was no test substance characterization reported, and 3) the study methodology was poorly described (e.g. missing information on exposure duration). Additionally, results of a dermal irritation study reported in the Hazardous Substances Data Bank (HSDB, 2017) using undiluted tea tree oil with the same chemotype as the TGAI/MP indicated that the test substance was a moderate irritant. The results described in the HSDB are consistent with the results of the new study.

The acute eye irritation and skin sensitization studies were originally waived based on the results of the original acute dermal irritation study. Since guideline studies now have been submitted for these data requirements, the toxicity categories have been revised according to the results of the new studies.

Although the REI is generally based on the Toxicity Category classification for the active ingredients in a product, it should be noted that the acute eye irritation study for the EP is classified into Toxicity Category II, indicating that the EP may be more irritating to the eye than the MP.

Table 1. Acute Toxicity Data for Tea Tree Oil Technical (40 CFR § 158.2050)

Study/OCSPP Guideline No.	Original data/Toxicity Category/MRID	New data/Toxicity Category/MRID	Updated Toxicity Category
Acute oral toxicity (rat) (870.1100)	LD_{50} = 1,752 mg/kg (1,752-2,450 mg/kg) III 47730404	LD_{50} = 1,049 mg/kg (550-2,000 mg/kg) III 50154901	III
Acute dermal toxicity (rat) (870.1200)	LD_{50} > 2,000 mg/kg (highest dose tested) III 47730404	LD_{50} > 2,000 mg/kg (highest dose tested) III 50154902	III
Acute inhalation toxicity (rat) (870.1300)	LC_{50} = 3.64 mg/L IV 48598701 and 48878201	LC_{50} = 3.64 mg/L IV 50154903	IV
Acute eye irritation (rabbit) (870.2400)	Waived because the MP was corrosive in the acute dermal irritation study. I 47730404	No corneal opacity or iritis were observed in animal throughout the study. A positive score (score of 2) was noted for conjunctival irritation in 1 animal, 1 hour after test substance instillation with clearance by 24 hours. All animals exhibited mild conjunctival irritation with clearance by 7 days. III 50154904	III
Acute dermal irritation (rabbit) (870.2500)	Corrosive. Well-defined to severe erythema and barely perceptible to slight edema were noted on the intact sites of 6/6 rabbits at the 24- and 72-hour evaluations. Well-defined to severe erythema and barely perceptible to moderate edema were noted on the abraded sites of 6/6 rabbits at the 24 and 72 hour evaluations. Three animals had erosion on abraded sites at the 72-hour evaluation. The primary irritation index (PII) was 5.0. I 47730404	Moderately irritating. Moderate to severe erythema and very slight edema was observed on 1 animal 24-48 hours after test substance administration. The severity of irritation was reduced at 72 hours with clearance by 7 days. Well defined erythema and very slight edema was observed on the remaining 2 animals from 1 hour through 72 hours after test substance administration. No irritation was noted by 7 days. III 50154905	III
Dermal sensitization (guinea pig) (870.2600)	Waived because the MP was corrosive in the acute dermal irritation study. 47730404	Not a sensitizer. 50154906	N/A

cc: A.L. Gonzales, R.S. Jones, C. Pfeifer, BPPD Science Review File, IHAD/ARS
A.L. Gonzales, Biologist, FT, PY-S: 03/22/17